

Eureka Math *A Story of Units*

Fifth Grade – Module 4

2015-2016

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Test based on Eureka Math Version 3. (Mid Module has not changed from Version 2. End-of-Module has formatting updates, and a change to item 1c.)



Module Assessment Overview

Purpose of Assessments

Mid-Module Assessment: These tasks address approximately the **first half** of the module's learning objectives, and provide important information for instruction and for grading.

End-of-Module Assessment: These tasks are based on all standards addressed in order to gauge students' full range of understanding of the **module as a whole**. The End-of-Module assessment should carry more weight than the Mid-Module Assessment in terms of student grades in the appropriate domain.

Administration of Assessments

- Mid- and End-of-Module Assessments are designed to be completed in approximately one class period. However, The tests can be given over multiple days as needed.
- Assessments are designed to be completed independently by students, without assistance.
- These tasks should not be preceded by review of similar problems.

Grading Guidance

The grading scale on Elementary Report Cards has been changed for 2015-2016 and beyond. Please note that **4 now indicates advanced understanding of grade level standards expected at this time of year.**

- 4 – Advanced:** Student demonstrates advanced understanding of grade level standards expected at this time of year.
- 3 – Proficient:** Student demonstrates proficiency with grade level standards expected at this time of year.
- 2 – Basic:** Student demonstrates basic understanding of grade level standards expected at this time of year. Student needs additional support and practice.
- 1 – Below Basic:** Student demonstrates minimal understanding of grade level standards expected at this time of year. Student needs significant support and practice.

Rubrics have been updated to reflect this change. Rubrics have been further modified from Eureka Math originals for clarity, accuracy, and alignment to Bethel's grade scale.

General Grading Guidance:

- On the report card, student learning is reported by CCSS domain. The Fifth Grade CCSS domains are: Operations and Algebraic Thinking, Number and Operations in Base Ten, Number and Operations – Fractions, Measurement and Data, and Geometry.
- Grades in each domain should be based on multiple sources of evidence, including the Mid- and End-of-Module Assessments. The End-of-Module assessment should carry more weight than the Mid-Module Assessment in terms of student grades in the appropriate domain.

Module 4 Grading Guidance:

- Standard 5.OA.2 will be assessed again in Module 6. The remaining standards taught and assessed in Module 4 are last/only taught and assessed in this module. (See checklist on page 5.)



Grade 5 Common Core State Standards Checklist by Module

This grade-level chart provides an at-a-glance view of when each standard is addressed. **Shaded boxes indicate standards assessed in Module 4, and future modules in which those standards will be assessed.** *Note that standards included in major clusters are followed by an asterisk (*).* Please refer to the Curriculum Overview of A Story of Units for a curriculum map and detailed grade-level descriptions including a summary of the year, a rationale of the module sequence, and a standards alignment chart.

CCSS		GRADE 5 MODULES					
		1	2	3	4	5	6
5.OA	1		X		X		
	2		X		X		X
	3						X
5.NBT	1*	X	X				
	2*	X	X				
	3a*	X					
	3b*	X					
	4*	X					
	5*		X				
	6*		X				
	7*	X	X		X		
5.NF	1*			X			
	2*			X			
	3*				X		
	4a*				X		
	4b*					X	
	5a*				X		
	5b*				X		
	6*				X		
	7a*				X		
	7b*				X		
	7c*				X		
5.MD	1	X	X		X		
	2				X		
	3a*					X	
	3b*					X	
	4*					X	
	5a*					X	
	5b*					X	
	5c*					X	
5.G	1						X
	2						X
	3					X	
	4					X	



Fifth Grade Module 4: Mid-Module Assessment Task Score Sheet

A Progression of Learning

A Progression of Learning is provided to describe steps that illuminate the gradually increasing understandings that students develop *on their way to proficiency*. In this chart, this progress is presented from left to right. The learning goal for each student is to move to the last step, “Evidence of solid reasoning with a correct answer”. These steps are meant to help teachers and students identify and celebrate what the student CAN do now, and what they need to work on next.

Score Key: A Progression of Learning

Little or no evidence of reasoning with an incorrect answer. (1 Point)	Evidence of some reasoning with an incorrect answer. (2 Points)	Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)	Evidence of solid reasoning with a correct answer. (4 Points)
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Module 4 Mid-Module Assessment									
Question	Domain			Standards					
	Operations and Algebraic Thinking	Number and Operations - Fractions	Measurement and Data	5.OA.1	5.OA.2	5.MF.3	5.NF.4a	5.NF.6	5.MD.1
1 a-d, g-h		1 2 3 4					X		
1 e, f			1 2 3 4						X
2		1 2 3				X	X		
3	1 2 3 4			X					
4	1 2 3 4				X				
5		1 2 3 4	1 2 3 4				X	X	X
6 a		1 2 3 4					X		
6 b			1 2 3 4						X
6 c		1 2 3 4					X		

Domain Score	Operations and Algebraic Thinking		Number and Operations - Fractions		Measurement and Data	
Total Points						
Level	4	7-8 pts.	4	18-19 pts.	4	11-12 pts.
	3	5-6 pts.	3	13-17 pts.	3	8-10 pts.
	2	3-4 pts.	2	8-12 pts.	2	5-7 pts.
	1	2 pts.	1	5-7 pts.	1	3-4 pts.

Note: For more information about standards assessed in this module, see back of this score sheet.

Notes:



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Fifth Grade Module 4: Mid-Module Assessment Task Score Sheet (continued)**Mid-Module Assessment Task (Topics A–D)
Clusters and Standards Addressed****Write and interpret numerical expressions.**

- 5.OA.1** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- 5.OA.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.*

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- 5.NF.3** Interpret a fraction as division of the numerator by the denominator ($\frac{a}{b} = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*
- 5.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- a. Interpret the product $(\frac{a}{b}) \times q$ as a parts of a partition of q into b parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show $(\frac{2}{3}) \times 4 = \frac{8}{3}$, and create a story context for this equation. Do the same with $(\frac{2}{3}) \times (\frac{4}{5}) = \frac{8}{15}$. (In general, $(\frac{a}{b}) \times (\frac{c}{d}) = \frac{ac}{bd}$.)*
- 5.NF.6** Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Convert like measurement units within a given measurement system.

- 5.MD.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Represent and interpret data.

- 5.MD.2** Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*



Fifth Grade Module 4: Mid-Module Assessment Task Rubric

A Progression of Learning				
Assessment Task Item and Standards Assessed	STEP 1 Little or no evidence of reasoning with an incorrect answer. (1 Point)	STEP 2 Evidence of some reasoning with an incorrect answer. (2 Points)	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)	STEP 4 Evidence of solid reasoning with a correct answer. (4 Points)
1 a, b, c, d, g, h 5.NF.4a	The student correctly answers 0-3 of the twelve items.	The student correctly answers 4-7 of the twelve items.	The student correctly answers 8-10 of the twelve items.	The student correctly answers 11-12 of the twelve items. (See below.)
	a. (1) 3 and (2) model g. (9) 49 and (10) model	b. (3) $3\frac{1}{2}$ and (4) model h. (11) $60\frac{2}{3}$ and (12) model	c. (5) 9 and (6) model	d. (7) 12 and (8) model
1 e, f 5.MD.1	The student correctly answers 0-1 of the four parts.	The student correctly answers 2 of the four parts.	The student correctly answers 3 of the four parts.	The student correctly answers 4 of the four parts. (See below.)
	e. (1) 8 inches and (2) model	f. (3) $1\frac{1}{2}$ feet and (4) model		
2 5.NF.4a 5.NF.3	The student correctly answers 0 of the two parts.	The student correctly answers 1 of the two parts.	The student correctly answers 2 of the two parts. (See below.)	No level 4 available for this item.
	(1) Writes a multiplication equation: $\frac{3}{4} \times 3 = ?$ (2) Finds the length of the shaded part of the bar as $\frac{9}{4}$ or $2\frac{1}{4}$.			
3 5.OA.1	The student correctly answers 0-1 of the four parts.	The student correctly answers 2 of the four parts.	The student correctly answers 3 of the four parts.	The student correctly answers 4 of the four parts. (See below.)
	(1-3) Identifies a, c, and d as equal to $\frac{3}{5} \times 6$. (4) Explains why (b) is not equal.			
4 5.OA.2	The student correctly writes 0 expressions.	The student correctly writes 1 expression.	The student correctly writes 2 of the three expressions.	The student correctly writes 3 of the three expressions. (See below.)
	a. $\frac{1}{3} \times (6 + 3)$ b. $4 \times (3 \div 4)$ or $4 \times \frac{3}{4}$ c. $\frac{1}{4} \times \left(\frac{2}{3} - \frac{1}{2}\right)$			



Assessment Recommendations for Eureka Math A Story of Units
Teaching and Learning Department - Bethel School District

Assessment Task Item and Standards Assessed	STEP 1 Little or no evidence of reasoning with an incorrect answer. (1 Point)	STEP 2 Evidence of some reasoning with an incorrect answer. (2 Points)	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)	STEP 4 Evidence of solid reasoning with a correct answer. (4 Points)
5 5.NF.4a 5.NF.6 See below for MD scoring of #5.	The student is unable to write an expression and find the total gallons of water collected.	The student: Makes several calculation errors leading to an incorrect total gallons collected (with a correct or incorrect expression).	The student: (1) Writes an expression using multiplication. (2) Accurately finds the total gallons of water collected based on incorrect equation. OR (2) Makes one calculation error leading to an incorrect total of gallons collected.	The student: (1) Writes an expression using multiplication. (2) Finds the total gallons of water collected as 15 $\frac{6}{8}$ gallons or 15 $\frac{3}{4}$ gallons.
5 5.MD.2 See above for NF scoring for #5.	The student is unable to write an expression.	The student accounts for few of the data points in the line plot in the expression.	The student accounts for most of the data points in the line plot in the expression.	The student correctly accounts for all data points in the line plot in the expression.
6 a 5.NF.4a	The student correctly answers 0-1 of the six parts.	The student correctly answers 2-3 of the six parts.	The student correctly answers 4-5 of the six parts.	The student correctly answers 6 of the six parts. (See below.)
	a. (1) Calculates $1\frac{1}{3}$ c butter and (2) writes expression (3) 16 oz of marshmallows and (4) writes expression (5) $8\frac{2}{3}$ c of cereal and (6) writes expression			
6 b 5.MD.1	The student shows no understanding of converting units.	The student shows little understanding of converting units.	The student sets up the conversion correctly but makes a calculation error.	The student correctly converts $1\frac{1}{3}$ c butter to $10\frac{2}{3}$ fluid ounces. NOTE: Allow credit in part b for correct conversions based on incorrect answers in part a.
6 c 5.NF.6	The student shows no understanding of solving problems involving fractions.	The student shows little understanding of solving problems involving fractions.	The student correctly (1) uses an equation or model OR (2) finds the number of treats taken to school as 18 treats.	The student correctly (1) uses an equation or model and (2) finds the number of treats taken to school as 18 treats.



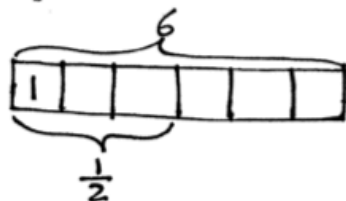
Fifth Grade Module 4: Mid-Module Assessment Task Key

Name Hayley

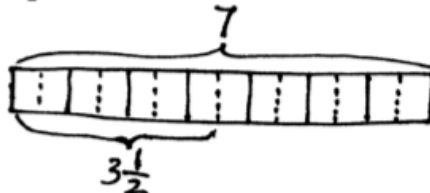
Date _____

1. Multiply or divide. Draw a model to explain your thinking.

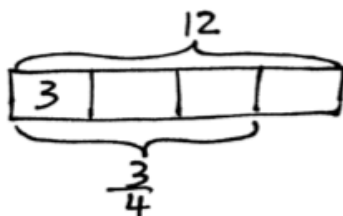
a. $\frac{1}{2} \times 6 = 6 \div 2 = 3$



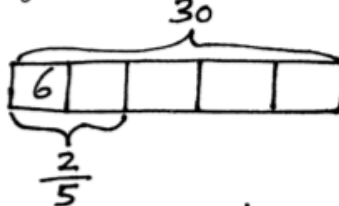
b. $\frac{1}{2} \times 7 = 7 \div 2 = 3\frac{1}{2}$



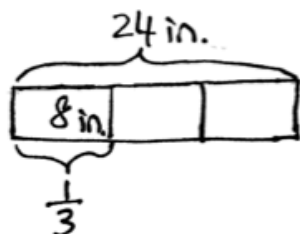
c. $\frac{3}{4} \times 12 = 9$



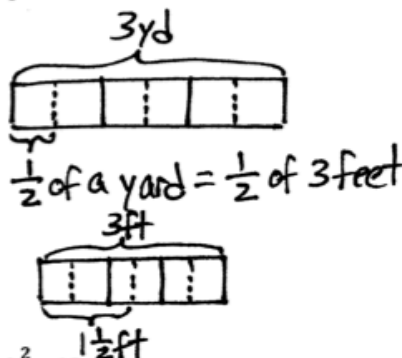
d. $\frac{2}{5} \times 30 = 12$



e. $\frac{1}{3}$ of 2 feet = 8 inches
 $2 \times 12 \text{ inches} = 24 \text{ inches}$

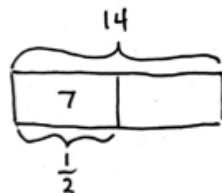


f. $\frac{1}{6}$ of 3 yards = 1 1/2 feet



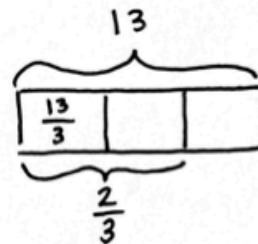
g. $(3 + \frac{1}{2}) \times 14$

$= (3 \times 14) + (\frac{1}{2} \times 14)$
 $= 42 + 7$
 $= 49$



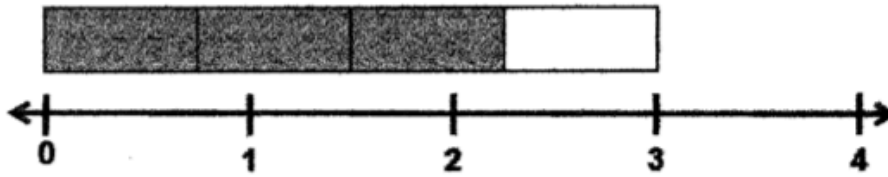
h. $4\frac{2}{3} \times 13$

$= (4 \times 13) + (\frac{2}{3} \times 13)$
 $= 52 + \frac{2 \times 13}{3}$
 $= 52 + \frac{26}{3}$
 $= 52 + 8\frac{2}{3}$
 $= 60\frac{2}{3}$



Fifth Grade Module 4: Mid-Module Assessment Task Key (continued)

2. If the whole bar is 3 units long, what is the length of the shaded part of the bar? Write a multiplication equation for the diagram, and then solve.



$$\frac{3}{4} \times 3 = \frac{3 \times 3}{4} = \frac{9}{4} = 2\frac{1}{4}$$

The shaded part of the bar is $2\frac{1}{4}$ units long.

3. Circle the expression(s) that are equal to $\frac{3}{5} \times 6$. Explain why the others are *not* equal using words, pictures, or numbers.

a. $3 \times (6 \div 5)$

b. $3 \div (5 \times 6)$

$$= 3 \div 30$$
$$= 0.1$$

c. $(3 \times 6) \div 5$

d. $3 \times \frac{6}{5}$

Fifth Grade Module 4: Mid-Module Assessment Task Key (continued)

4. Write the following as expressions.

a. One-third the sum of 6 and 3.

$$\frac{1}{3} \times (6 + 3)$$

b. Four times the quotient of 3 and 4.

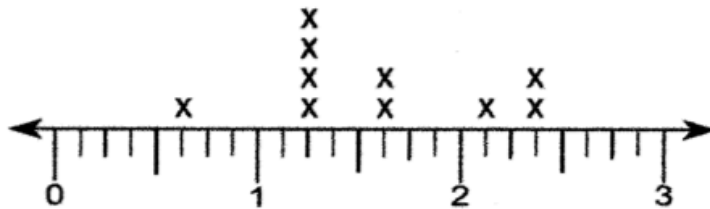
$$4 \times (3 \div 4)$$

c. One-fourth the difference between $\frac{2}{3}$ and $\frac{1}{2}$.

$$\frac{1}{4} \times \left(\frac{2}{3} - \frac{1}{2} \right)$$

5. Mr. Schaum used 10 buckets to collect rainfall in various locations on his property. The following line plot shows the amount of rain collected in each bucket in gallons. Write an expression that includes multiplication to show how to find the total amount of water collected in gallons. Then solve your expression.

Amount of Rain (in gallons)



$$\begin{aligned} & \frac{5}{8} + (4 \times 1\frac{2}{8}) + (2 \times 1\frac{5}{8}) + 2\frac{1}{8} + (2 \times 2\frac{3}{8}) \\ &= \frac{5}{8} + 4 + \frac{4 \times 2}{8} + 2 + \frac{2 \times 5}{8} + 2\frac{1}{8} + 4 + \frac{2 \times 3}{8} \\ &= 12 + \frac{5}{8} + \frac{8}{8} + \frac{10}{8} + \frac{1}{8} + \frac{6}{8} \\ &= 13 + \frac{22}{8} \\ &= 15\frac{6}{8} = 15\frac{3}{4} \end{aligned}$$

Mr. Schaum collected $15\frac{3}{4}$ gallons of water.

Fifth Grade Module 4: Mid-Module Assessment Task Key (continued)

6. Mrs. Williams uses the following recipe for crispy rice treats. She decides to make $\frac{2}{3}$ of the recipe.

2 cups melted butter
24 oz marshmallows
13 cups rice crispy cereal

- a. How much of each ingredient will she need? Write an expression that includes multiplication. Solve by multiplying.

Butter: $\frac{2}{3} \times 2 \text{ cups} = \frac{2 \times 2}{3} = \frac{4}{3} = 1\frac{1}{3} \text{ cups}$

Marshmallows: $\frac{2}{3} \times 24 \text{ oz.} = \frac{2 \times 24}{3} = \frac{48}{3} = 16 \text{ oz.}$

Cereal: $\frac{2}{3} \times 13 \text{ cups} = \frac{2 \times 13}{3} = \frac{26}{3} = 8\frac{2}{3} \text{ cups}$

she will need $1\frac{1}{3}$ cups of butter, 16 ounces of marshmallows, and $8\frac{2}{3}$ cups of rice crispy cereal.

- b. How many fluid ounces of butter will she use? (Use your measurement conversion chart if you wish.)

1 cup = 8 ounces $1\frac{1}{3} \times 8 = (1 \times 8) + (\frac{1}{3} \times 8)$

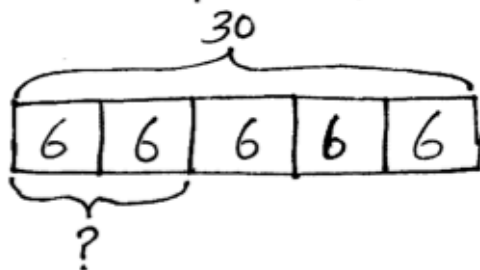
$$= 8 + \frac{8}{3}$$

$$= 8 + 2\frac{2}{3}$$

$$= 10\frac{2}{3}$$

She will use $10\frac{2}{3}$ fluid ounces of butter.

- c. When the crispy rice treats have cooled, Mrs. Williams cuts them into 30 equal pieces. She gives two-fifths of the treats to her son and takes the rest to school. How many treats will Mrs. Williams take to school? Use any method to solve.



$$\begin{array}{r} 30 \\ -12 \\ \hline 18 \end{array}$$

Mrs. Williams will take 18 treats to school.

Fifth Grade Module 4: End-of-Module Assessment Task Score Sheet

A Progression of Learning

A Progression of Learning is provided to describe steps that illuminate the gradually increasing understandings that students develop *on their way to proficiency*. In this chart, this progress is presented from left to right. The learning goal for each student is to move to the last step, “Evidence of solid reasoning with a correct answer”. These steps are meant to help teachers and students identify and celebrate what the student CAN do now, and what they need to work on next.

Score Key: A Progression of Learning

Little or no evidence of reasoning with an incorrect answer. (1 Point)	Evidence of some reasoning with an incorrect answer. (2 Points)	Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)	Evidence of solid reasoning with a correct answer. (4 Points)
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Module 4 End-of-Module Assessment

	Domain				Standards								
Question	Operations and Algebraic Thinking	Number and Operations in Base Ten	Number and Operations – Fractions	Measurement and Data	5.OA.2	5.NBT.7	5.NF.3	5.NF.4	5.NF.5	5.NF.6	5.NF.7	5.MD.1	5.MD.2
1			1 2 3 4					X			X		
2		1 2 3 4				X							
3	1 2 3 4				X								
4a			1 2 3				X			X			
4 b, c				1 2 3 4								X	
5			1 2 3 4							X	X		
6			1 2 3 4						X				
7 a, b				1 2 3 4								X	X
7c,d,e,f,g			1 2 3 4				X	X		X	X		

Domain Score	Operations and Algebraic Thinking		Number and Operations in Base Ten		Number and Operations – Fractions		Measurement and Data	
Total Points								
Level	4	4 pts.	4	4 pts.	4	18-19 pts.	4	7-8 pts.
	3	3 pts.	3	3 pts.	3	13-17 pts.	3	5-6 pts.
	2	2 pts.	2	2 pts.	2	8-12 pts.	2	3-4 pts.
	1	1 pt.	1	1 pt.	1	5-7 pts.	1	2 pts.

Note: For more information about standards assessed in this module, see back of this score sheet.

Notes:



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Fifth Grade Module 4: End-of-Module Assessment Task Score Sheet (continued)**End-of-Module Assessment Task (Topics A–H)**
Standards Addressed**Write and interpret numerical expressions.**

- 5.OA.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.*

Perform operations with multi-digit whole numbers and with decimals to hundredths.

- 5.NBT.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- 5.NF.3** Interpret a fraction as division of the numerator by the denominator ($\frac{a}{b} = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

- 5.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

- a. Interpret the product of $(\frac{a}{b}) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show $(\frac{2}{3}) \times 4 = \frac{8}{3}$ and create a story context for this equation. Do the same with $(\frac{2}{3}) \times (\frac{4}{5}) = \frac{8}{15}$. (In general, $(\frac{a}{b}) \times (\frac{c}{d}) = \frac{ac}{bd}$.)*

- 5.NF.5** Interpret multiplication as scaling (resizing) by:

- a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
- b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $\frac{a}{b} = \frac{n \times a}{n \times b}$ to the effect of multiplying $\frac{a}{b}$ by 1.

- 5.NF.6** Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

- 5.NF.7** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Students capable of multiplying fractions can generally develop strategies to divide fractions by reasoning about the relationship between multiplication and division. However, division of a fraction by a fraction is not a requirement at this grade level.)

- a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for $(\frac{1}{3}) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(\frac{1}{3}) \div 4 = \frac{1}{12}$ because $(\frac{1}{12}) \times 4 = \frac{1}{3}$.*
- b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for $4 \div (\frac{1}{5})$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (\frac{1}{5}) = 20$ because $20 \times (\frac{1}{5}) = 4$.*
- c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share $\frac{1}{2}$ lb of chocolate equally? How many $\frac{1}{3}$ -cup servings are in 2 cups of raisins?*

Convert like measurement units within a given measurement system.

- 5.MD.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Represent and interpret data.

- 5.MD.2** Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*



Fifth Grade Module 4: End-of-Module Assessment Task Rubric

A Progression of Learning				
Assessment Task Item and Standards Assessed	STEP 1 Little or no evidence of reasoning with an incorrect answer. (1 Point)	STEP 2 Evidence of some reasoning with an incorrect answer. (2 Points)	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)	STEP 4 Evidence of solid reasoning with a correct answer. (4 Points)
1 5.NF.4 5.NF.7	The student draws valid models and/or arrives at the correct answer for 0-3 of the twelve parts.	The student draws valid models and/or arrives at the correct answer for 4-7 of the twelve parts.	The student draws valid models and/or arrives at the correct answer for 8-10 of the twelve parts.	The student draws valid models and/or arrives at the correct answer for 11-12 of the twelve parts. (See below.)
	a. (1) $\frac{1}{12}$ and (2) model d. (7) 12 and (8) model	b. (3) $\frac{3}{12}$ and (4) model e. (9) 20 and (10) model	c. (5) $\frac{9}{20}$ and (6) model f. (11) $\frac{1}{20}$ and (12) model	
2 5.NBT.7	The student correctly answers 0-1 of the six items.	The student correctly answers 2-3 of the six items.	The student correctly answers 4-5 of the six items.	The student correctly answers 6 of the six items. (See below.)
	a. (1) 48 e. (5) 9.6 or $\frac{384}{40}$ or any equivalent fraction	b. (2) 0.48 c. (3) 400 d. (4) 4 f. (6) 32		
3 5.OA.2	The student has no correct answers.	The student has one correct answer.	The student has two correct answers.	The student correctly answers all three items:
	a. (1) $\frac{1}{5} \times \left(\frac{1}{2} + \frac{1}{3}\right)$	b. (2) $(9 + 12) \times 2\frac{1}{2}$ or $2\frac{1}{2} \times (9 + 12)$	c. (3) $24 \div \left(1\frac{1}{2} - \frac{3}{4}\right)$	
4 a 5.NF.3 5.NF.6	The student does not attempt to answer the question.	The student makes a computation error resulting in an incorrect number of hours.	The student correctly answers 4.8 hours.	There is no level 4 available for this item.
4 b, c 5.MD.1	The student is unable to covert units.	The student makes computation errors in converting in b and c.	The student correctly converts units in b or c.	The student correctly coverts units in b and c. (See below.)
	b. 4 hours, 48 minutes NOTE: Allow for correct unit conversions based on an incorrect answer in 4a.	c. 288 minutes		



Assessment Recommendations for Eureka Math A Story of Units
Teaching and Learning Department - Bethel School District

A Progression of Learning				
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5 5.NF.6 5.NF.7	The student correctly answers 0-3 of the eight parts.	The student correctly answers 4-5 of the eight parts.	The student correctly answers 6-7 of the eight parts.	The student correctly answers 8 of the eight parts. (See below.)
	a. (1) $5 \div 2$ b. (2) $5 \div \frac{1}{2}$ c. (3) Draws a correct diagram for $5 \div 2$ and (4) solves $2 \frac{1}{2}$ (5) Draws a correct diagram for $5 \div \frac{1}{2}$ and (6) solves. NOTE: Allow credit for a correct diagram based on an incorrect expression in parts a and b. d. (7) Correctly identifies $5 \div 2$, and (8) offers solid reasoning.			
6 5.NF.5	The student gives both a faulty example and faulty explanation.	The student gives an example proving Jackson's reasoning is wrong OR Explains Jackson's mistake using pictures, words, or numbers.	The student gives an example proving that Jackson's reasoning is wrong and explains Jackson's mistake using pictures, words, or numbers.	The student gives a strong example proving that Jackson's reasoning is wrong and explains Jackson's mistake using pictures, words, and numbers.
7 a, b 5.MD.1 5.MD.2	The student correctly answers 0-1 of the four items.	The student correctly answers 2 of the four items.	The student correctly answers 3 of the four items.	The student correctly answers 4 of the four items. (See below.)
	a. B. (1) 1 gal, 2 qt., 0 pt. C. (2) 2 gal, 0 qt., 1 pt. D. (3) 2 gal, 2 qt., 1 pt. b. (4) 13 gal, 1 pt.			
7 c, d, e, f, g 5.NF.3 5.NF.4 5.NF.6 5.NF.7	The student correctly answers 0-1 of the seven parts.	The student correctly answers 2-4 of the seven parts.	The student correctly answers 5-6 of the seven parts.	The student correctly answers 7 of the seven parts correctly. (See below.)
	c. (1) $2 \frac{1}{9}$ gal d. (2) $1 \frac{7}{12}$ gal e. (3) $\frac{1}{12}$ gal f. (4) answers 6 cups, (5) draws a tape diagram, and (6) writes an equation g. (7) 12 bottles			



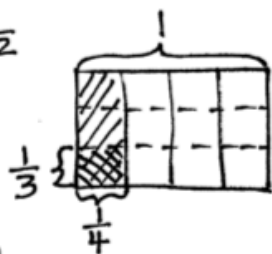
Fifth Grade Module 4: End-of-Module Assessment Task Key

Name Seth

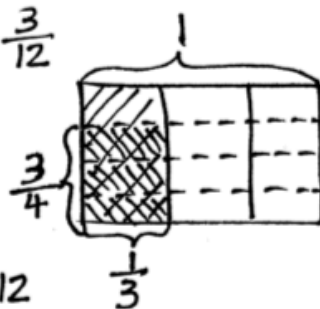
Date _____

1. Multiply or divide. Draw a model to explain your thinking.

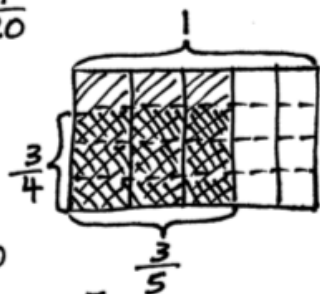
a. $\frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$



b. $\frac{3}{4}$ of $\frac{1}{3} = \frac{3}{12}$



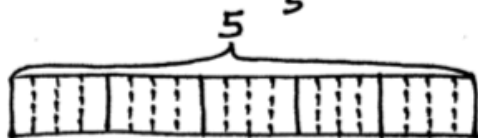
c. $\frac{3}{4} \times \frac{3}{5} = \frac{9}{20}$



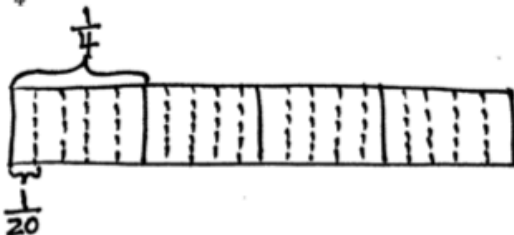
d. $4 \div \frac{1}{3} = 12$



e. $5 \div \frac{1}{4} = 20$



f. $\frac{1}{4} \div 5 = \frac{1}{20}$



2. Multiply or divide using any method.

a. $1.5 \times 32 = 48.0$

$$\begin{array}{r} 15(\text{tenths}) \\ \times 32 \\ \hline 30 \\ + 450 \\ \hline 480(\text{tenths}) \end{array}$$

c. $12 \div 0.03$
 $= (12 \times 100) \div (0.03 \times 100)$
 $= 1,200 \div 3$
 $= 400$

e. $12.8 \times \frac{3}{4}$
 $= (12 \times \frac{3}{4}) + (\frac{8}{10} \times \frac{3}{4})$
 $= 9 + \frac{24}{40}$
 $= 9\frac{24}{40} = 9\frac{3}{5}$

b. 1.5×0.32
 $= (1 \times 0.32) + (0.5 \times 0.32)$
 $= 0.32 + 0.16$
 $= 0.48$

d. $1.2 \div 0.3$
 $= (1.2 \times 10) \div (0.3 \times 10)$
 $= 12 \div 3$
 $= 4$

f. $102.4 \div 3.2$
 $= (102.4 \times 10) \div (3.2 \times 10)$
 $= 1,024 \div 32$
 $= 32$

$$\begin{array}{r} 32 \\ 32 \overline{) 1,024} \\ \underline{-96} \\ 64 \\ \underline{-64} \\ 0 \end{array}$$

Fifth Grade Module 4: End-of-Module Assessment Task Key (continued)

3. Fill in the chart by writing an equivalent expression.

a.	One-fifth the sum of one-half and one-third	$\frac{1}{5} \times (\frac{1}{2} + \frac{1}{3})$
b.	Two and one-half times the sum of nine and twelve	$2\frac{1}{2} \times (9 + 12)$
c.	Twenty-four divided by the difference between $1\frac{1}{2}$ and $\frac{3}{4}$	$24 \div (1\frac{1}{2} - \frac{3}{4})$

4. A castle has to be guarded 24 hours a day. Five knights are ordered to split each day's guard duty equally. How long will each knight spend on guard duty in one day?

- a. Record your answer in hours.

$$\begin{array}{r} 4.8 \\ 5 \overline{)24.0} \\ \underline{-20} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

Each Knight will spend 4.8 hours on guard duty in one day.

- b. Record it in hours and minutes.

$$\frac{1}{10} \text{ of } 60 \text{ min} = 6 \text{ min}$$

$$\frac{8}{10} \text{ of } 60 \text{ min} = 48 \text{ min}$$

$$4.8 \text{ hours} = 4 \text{ hours } 48 \text{ minutes}$$

Each Knight will spend 4 hours and 48 minutes on guard duty in one day.

- c. Record your answer in minutes.

$$1 \text{ hour} = 60 \text{ minutes}$$

$$4.8 \text{ hour} = \underline{\hspace{1cm}} \text{ min.}$$

$$= 4.8 \times 1 \text{ hr}$$

$$= 4.8 \times 60 \text{ min}$$

$$= 288.0 \text{ min}$$

$$\begin{array}{r} 48 \text{ (tenths)} \\ \times 60 \\ \hline 2880 \\ +2880 \\ \hline 2,880 \text{ (tenths)} \end{array}$$

Each Knight will spend 288 minutes on guard duty in one day.



Fifth Grade Module 4: End-of-Module Assessment Task Key (continued)

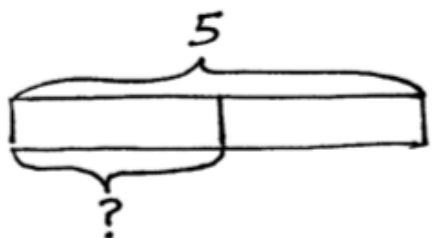
5. On the blank, write a division expression that matches the situation.

- a. $5 \div 2$ Mark and Jada share 5 yards of ribbon equally. How much ribbon will each get?

- b. $5 \div \frac{1}{2}$ It takes half of a yard of ribbon to make a bow. How many bows can be made with 5 yards of ribbon?

c. Draw a diagram for each problem and solve.

$$5 \div 2 = 2\frac{1}{2}$$

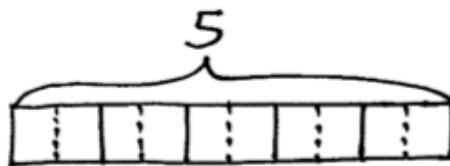


$$2 \text{ units} = 5$$

$$1 \text{ unit} = 5 \div 2$$

$$= \frac{5}{2} = 2\frac{1}{2}$$

$$5 \div \frac{1}{2} = 10$$



- d. Could either of the problems also be solved by using $\frac{1}{2} \times 5$? If so, which one(s)? Explain your thinking.

$$5 \div 2 = 5 \times \frac{1}{2}$$

Dividing by 2 is the same as taking $\frac{1}{2}$ of something, which means multiplying.

$\frac{1}{2} \times 5$ is the same as $5 \times \frac{1}{2}$.

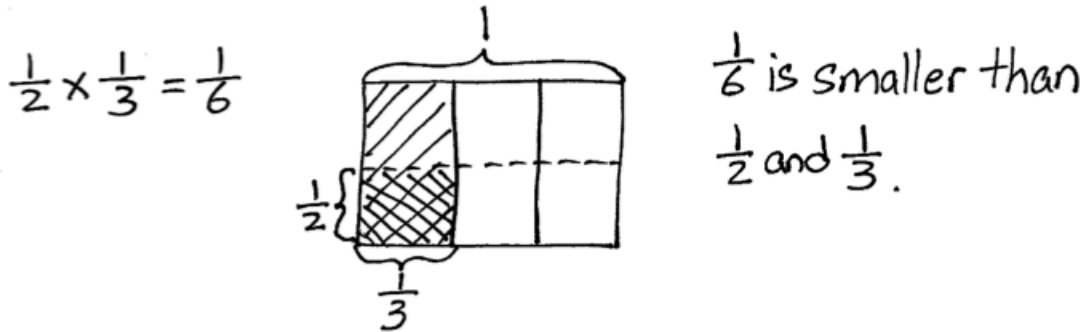


Fifth Grade Module 4: End-of-Module Assessment Task Key (continued)

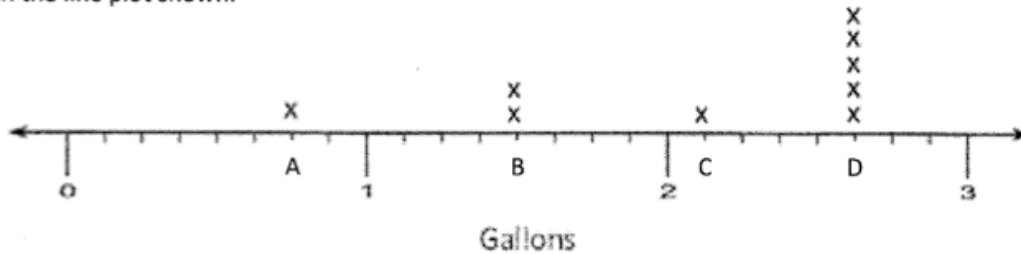
6. Jackson claims that multiplication always makes a number bigger. He gave the following examples:

- If I take 6, and I multiply it by 4, I get 24, which is bigger than 6.
- If I take $\frac{1}{4}$, and I multiply it by 2 (whole number), I get $\frac{2}{4}$, or $\frac{1}{2}$ which is bigger than $\frac{1}{4}$.

Jackson's reasoning is incorrect. Give an example that proves he is wrong, and explain his mistake using pictures, words, or numbers.



7. Jill collected honey from 9 different beehives, and recorded the amount collected, in gallons, from each hive in the line plot shown:



a. She wants to write the value of each point marked on the number line above (Points A–D) in terms of the largest possible whole number of gallons, quarts, and pints. Use the line plot above to fill in the blanks with the correct conversions. (The first one is done for you.)

A. 0 gal 3 qt 0 pt

B. 1 gal 2 qt 0 pt

C. 2 gal 0 qt 1 pt

D. 2 gal 2 qt 1 pt

Fifth Grade Module 4: End-of-Module Assessment Task Key (continued)

- b. Find the total amount of honey collected from the five hives that produced the most honey.

$$1 \text{ unit} = 2\frac{5}{8} \text{ gallons}$$

$$\begin{aligned} 5 \text{ units} &= 5 \times 2\frac{5}{8} \text{ gallons} \\ &= (5 \times 2) + (5 \times \frac{5}{8}) \text{ gallons} \\ &= 10 + \frac{25}{8} \text{ gallons} \\ &= 10 + 3\frac{1}{8} \text{ gallons} \\ &= 13\frac{1}{8} \text{ gallons} \end{aligned}$$

$13\frac{1}{8}$ gallons or 13 gallons and 1 pint were collected from the five hives that produced the most honey.

- c. Jill collected a total of 19 gallons of honey. If she distributes all of the honey equally between 9 jars, how much honey will be in each jar?

$$19 \div 9 = \frac{19}{9} = 2\frac{1}{9}$$

There will be $2\frac{1}{9}$ gallons of honey in each jar.

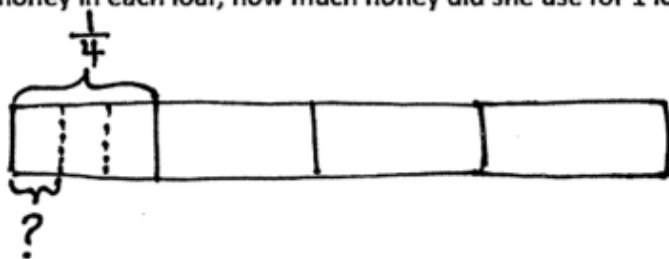
- d. Jill used $\frac{3}{4}$ of a jar for baking. How much honey did she use baking?

$$\begin{aligned} &\frac{3}{4} \text{ of } 2\frac{1}{9} \text{ gallons} \\ &= \frac{3}{4} \times \frac{19}{9} \text{ gallons} \\ &= \frac{\cancel{3} \times 19}{4 \times \cancel{9}_3} \text{ gallons} \\ &= \frac{19}{12} = 1\frac{7}{12} \text{ gallons} \end{aligned}$$

She used $1\frac{7}{12}$ gallons of honey for baking.

Fifth Grade Module 4: End-of-Module Assessment Task Key (continued)

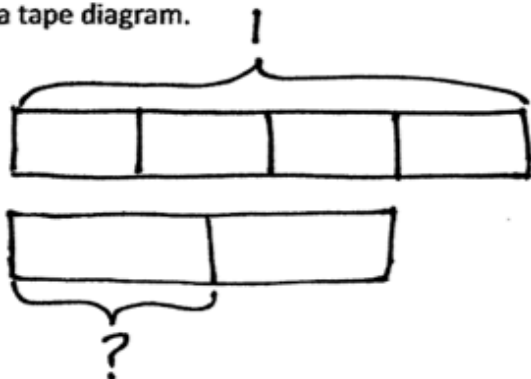
- e. Jill's mom used $\frac{1}{4}$ of a gallon of honey to bake 3 loaves of bread. If she used an equal amount of honey in each loaf, how much honey did she use for 1 loaf?



$$\frac{1}{4} \div 3 = \frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$$

She used $\frac{1}{12}$ of a gallon of honey for 1 loaf.

- f. Jill's mom stored some of the honey in a container that held $\frac{3}{4}$ of a gallon. She used half of this amount to sweeten tea. How much honey, in cups, was used in the tea? Write an equation and draw a tape diagram.



$$\frac{1}{2} \times \frac{3}{4} \text{ gallon} = \frac{3}{8} \text{ gallon}$$

$$\frac{3}{8} \text{ gallon} = \frac{3}{8} \times 1 \text{ gallon}$$

$$= \frac{3}{8} \times 16 \text{ cups}$$

$$= \frac{3 \times 16}{8} \text{ cups}$$

$$= 6 \text{ cups}$$

She used 6 cups of honey in the tea.

- g. Jill uses some of her honey to make lotion. If each bottle of lotion requires $\frac{1}{4}$ gallon, and she uses a total of 3 gallons, how many bottles of lotion does she make?

$$3 \div \frac{1}{4} = 3 \times 4 = 12$$

She makes 12 bottles of lotion.